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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/576,986

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EXAMINER

LU, JIPING

ART UNIT

PAPER NUMBER

3743

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DELIVERY MODE

05/27/2009

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/576,986	Applicant(s) KATEFIDIS ET AL.	
	Examiner Jiping Lu	Art Unit 3743	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 May 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 5/11/09 has been entered.

Claim Rejections - 35 USC § 103

2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

3. Claims 1-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ishimaru (EP 0568822 A2) in view of Huh (KR 2003075939A) and Keefer et al (U.S. Pub. 2002/0112479) and Frank et al (U.S. Pat. 6,541,141).

Ishimaru shows a system and a method for drying objects comprising a drying cubicle 6, a heating device 10 which heats the hot air 26a introduced into the drying cubicle 6, wherein the heating device includes at least high temperature fuel cell 10 the process waste air 19 from which can be fed to the drying cubicle 6 as hot air. There is a control system 47 to operate the fuel cell 10 and supplying electrical energy to other consumers (see Fig. 2). However, Ishimaru does not expressly teach the concept of feeding process waste air of the fuel cell directly to a drying cubicle in which the objects are exposed to hot air and a control system which operates the fuel

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cell regardless of the electrical energy generated thereby that the thermal energy generated thereby meets the requirement in the drying cubicle. Ishimura also does not disclose a high temperature fuel cell with hot air having a temperature of at least 600°C and a supply line for introducing air from the atmosphere into the drying chamber. Huh et al. shows a system for drying objects comprising a drying cubicle 20 including at least one section in which the objects are exposed to hot air; a heating device 10 which heats the hot air introduced into the drying cubicle 20, wherein the heating device includes at least one high temperature fuel cell the process waste air 30 from which can be fed to the drying cubicle 20 as hot air; there is provided a control system 40 which so operates the high temperature fuel cell regardless of the electrical energy generated thereby that thermal energy generated thereby meets the requirement in the drying cubicle 20. Keefer et al. teach a high temperature fuel cell operating at very high temperatures in the range of about 600°C to about 1000°C which meets the claimed limitation of at least 600°C. Frank patent teaches a well known air supply line drawing air 25 from the atmosphere into the drying chamber 24 same as the applicant's. Therefore, it would have been obvious to one skill in the art at the time the invention was made to modify the system of Ishimaru to direct or feed process waste air of the fuel cell directly to a drying cubicle and to control the supplying of the thermal energy regardless of the electrical energy generated as taught by the Huh patent in order to recover waste heat and to more effectively reduce the loss of energy. It would also have been obvious to one skill in the art at the time the invention was made to further modify the system of Ishimaru to substitute the high temperature fuel cell of Keefer et al. for the fuel cell of Ishimaru in order to supply high temperature waste air to the drying cubicle and to provide dryer of Ishimura with an air supply lined as taught by Frank et al. in order to supply air from the

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atmosphere into the drying chamber. As for the limitations in claims 2-4, they are viewed as functional or intended use limitations. As MPEP 2114 states, “[a] claim containing a “recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus” if the prior art apparatus teaches all the structural limitations of the claim”. In this case, the limitations above do not add any structural limitations to the claim and the system of Ishimaru as modified by Huh et al. discloses all the structural limitations.

4. Claims 7-10, 13-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ishimaru (EP 0568822 A2) in view of Huh (KR 2003075939A) and Keefer et al U.S. Pub. 2002/0112479 .

Ishimaru shows a method for drying objects comprising a drying cubicle 6, a heating device 10 which heats the hot air 26a introduced into the drying cubicle 6, wherein the heating device includes at least high temperature fuel cell 10 the process waste air 19 from which can be fed to the drying cubicle 6 as hot air. There is a control system 47 to operate the fuel cell 10 and supplying electrical energy to other consumers (see Fig. 2). However, Ishimaru does not expressly teach the concept of feeding process waste air of the fuel cell directly to a drying cubicle at a temperature of at least at 600⁰C in which the objects are exposed to hot air and a control system which operates the fuel cell regardless of the electrical energy generated thereby that the thermal energy generated thereby meets the requirement in the drying cubicle. Huh et al. shows a system for drying objects comprising a drying cubicle 20 including at least one section in which the objects are exposed to hot air; a heating device 10 which heats the hot air introduced into the drying cubicle 20, wherein the heating device includes at least one high temperature fuel

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cell the process waste air 30 from which can be fed to the drying cubicle 20 as hot air; there is provided a control system 40 which so operates the high temperature fuel cell regardless of the electrical energy generated thereby that thermal energy generated thereby meets the requirement in the drying cubicle 20. Keefer et al. teach a high temperature fuel cell operating at very high temperatures in the range of about 600⁰C to about 1000⁰C which meets the claimed limitation of at least 600⁰C. Therefore, it would have been obvious to one skill in the art at the time the invention was made to modify the method of Ishimaru to control the supplying of the thermal energy regardless of the electrical energy generated and to direct or feed process waste air of the fuel cell directly to a drying cubicle at a temperature of at least at 600⁰C as taught by the Huh and Keefer et al patents in order to recover waste heat and to more effectively reduce the loss of energy.

5. Claims 5 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ishimaru (EP 0568822 A2) in view of Huh (KR 2003075939A) and Keefer et al (U.S. Pub. 2002/0112479) and Frank et al (U.S. Pat. 6,541,141) as applied to claim 1 as above and further in view of Thompson (U.S. Pat. 5,983,521).

The system of Ishimaru as modified by Huh et al. and Keefer et al. and Frank et al. as above includes all that is recited in claims 5 and 6 except for a post combustion device for purify the hydrocarbon and waste heat recovery system. Thompson shows a post combustion device 12 for purifying the hydrocarbon and waste heat recovery system 44, 46 same as claimed.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify the system and method of Ishimaru to include a post-

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combustion device or afterburner and waste heat recovery as taught by Thompson in order to improve exhaust air quality.

6. Claims 11 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ishimaru (EP 0568822 A2) in view of Huh (KR 2003075939A) and Keefer et al (U.S. Pub. 2002/0112479) as applied to claim 7 as above, and further in view of Thompson (U.S. Pat. 5,983,521).

The method of Ishimaru as modified by Huh et al. and Keefer et al. as above includes all that is recited in claims 11 and 12 except for a post combustion device for purify the hydrocarbon and waste heat recovery system. Thompson shows a post combustion device 12 for purifying the hydrocarbon and waste heat recovery system 44, 46 same as claimed. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify the method of Ishimaru to include a post-combustion device or afterburner and waste heat recovery as taught by Thompson in order to improve exhaust air quality.

7. Claims 15-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ishimaru (EP 0568822 A2) in view of Huh (KR 2003075939A) and Keefer et al (U.S. Pub. 2002/0112479) as applied to claim 7 as above, and further in view of Poltorak (U. S. pat. 7,158,116).

The method of Ishimaru as modified by Huh et al. and Keefer et al. as above includes all that is recited in claims 15-18 except for the control system utilizing the electrical energy of the fuel cell. Poltorak teaches a control system utilizing the electrical energy of the fuel cell same as claimed (see claim 13). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify the method of Ishimaru to use electrical

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energy of the fuel cell to power the control system as taught by Poltorak in order to pursue an intended use.

Response to Arguments

8. Applicant's arguments with respect to claims field on 5/11/09 have been considered but are not persuasive to overcome the rejection. The newly added limitations are clearly shown by the newly cited prior art references, Keefer et al US Pub. 2002/0112479 and Frank et al , U.S. Pat. 6,541,141. In view of this combined teaching of the prior art references, one skilled in the art would have found it to be obvious to combine because to direct or feed process waste air of the fuel cell directly to a drying cubicle and to control the supplying of the thermal energy regardless of the electrical energy generated would have been predictable (see KSR International Co. v. Teleflex, Inc. 82 USPQ 2d 1385 (2007)).

Conclusion

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jiping Lu whose telephone number is 571 272 4878. The examiner can normally be reached on Monday-Friday, 9:00 AM - 5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, KENNETH RINEHART can be reached on 571-272-4881. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Jiping Lu/
Primary Examiner
Art Unit 3743

J. L.